

DOCUMENT RESUME

ED 087 479

IR 000 242

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TITLE Needs For Improvement Of Professional Education In
Library And Information Science.
INSTITUTION Syracuse Univ., N.Y. Center for the Study of
Information and Education.
PUB DATE 73
NOTE 72p.
EDRS PRICE MF-\$0.65 HC-\$3.29
DESCRIPTORS *Curriculum Design; Curriculum Planning; Educational
Improvement; *Educational Objectives; Information
Science; *Library Education; *Library Schools;
Literature Reviews; Professional Education;
*Relevance (Education)
IDENTIFIERS *Competency Based Education

ABSTRACT

A review of recent professional literature on graduate education for library and information science reveals that many improvements are being actively sought, but most of these desired changes would take the form of minor curriculum adjustments to existing programs. What is needed, however, is a redefinition of the whole field of library and information science, in terms of future information needs and the probable shape of future information service institutions. On making a tentative forecast of these needs, there can be delineated several fundamental improvements needed in library education, including the strengthening of continuing education, the adoption of newer instructional strategies, and the recognition that a single unified program of study is no longer adequate for a profession with such varied concerns. But the single most vital task involves the positing of goals responsive to changing societal needs and the formulation of clearly stated learning objectives which will identify specific competencies to be acquired.
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ED 087479

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NEEDS FOR IMPROVEMENT OF PROFESSIONAL EDUCATION
IN LIBRARY AND INFORMATION SCIENCES

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I. INTRODUCTION

Toynbee once predicted that three hundred years from now the twentieth century will be noted not for wars or revolutions, for splitting the atom, or for man's reaching the moon, but for having been the first age in which people dared think it practicable to provide the benefits of civilization to all mankind.

Acknowledged as a base condition of "civilized" existence in the world today is the view that the human situation has become one in which no single factor is more important to progress in any sector of society than is the availability of reliable information (kept readily accessible, reasonably organized, and accurately represented or interpreted) in terms of which judgements of worth can be made and reasoned decisions for action may be carried out.

Providing information has always been a prime library function. But today one must ask: Do library services and those provided by newer information centers actually meet societal requirements; are the effects of recent social, economic, and technological developments reflected to the extent they should be, and are such matters given proper consideration in designing professional education programs to prepare future librarians and information specialists?

The last of those questions provided the chief stimulus for work done by the CSIE Task Force on "Needs for Improvement of Professional Education in Library and Information Science."

Those recruited to serve as members of the Task Force accepted the assignment on the condition that their responsibility would be to submit in any form they deemed suitable an appraisal of needs based in large part on previous personal experience in the field. As of June 15, 1973, the Task Force had completed three months of work. Fifty-two man days were spent by Task Force members in attending various orientation, planning and work review meetings held for CSIE staff and/or its projects advisory board, joint participation in a two-day study conference on the "Future of Library Education" held in Los Angeles in February 1973 under auspices of the School of Library Science (University of Southern California), and related project travel. Twenty-eight days were required for completion of visits to seventeen Universities.

In all, the Task Force examined more than 150 published documents, (a number of book-length and many in fiche format) and checked several hundred abstracts and bibliographic references. Since the time and budget first allocated for support of Task Force work did not permit completion of visits originally proposed to professional education programs located in the Pacific Northwest and Mountain Plains regions nor to several larger libraries, information centers, businesses and industries which employ significant numbers of library and information service personnel, these were recommended for completion at a later date. Ten days were used for organization, drafting and discussions of this statement.

In planning the work to be accomplished, Task Force members agreed that major conclusions reached regarding needs for improvement of professional

education in library and information science would be reported in a single listing and that recommendations pertaining to the content of instruction would be stated (inssofar as possible) in terms of competence to be acquired.

Other basic agreements included the following: (1) Task Force members would consider primarily needs for improving graduate professional education programs offered by graduate schools presently accredited by the American Library Association; (2) they would be concerned chiefly with needs for improvement in light of anticipated future information requirements of society and the probable shape of future information service agencies; (3) primary attention would be given preparation for performance of professional library functions other than those provided in elementary and secondary schools; (4) if appropriate, suggestions for further investigation and experimental project support would be presented separately for consideration by the United States Office of Education and other agencies having a particular interest in the education of librarians and information specialists.

Task Force members also concurred at the outset with the following propositions (presented here in no particular order of importance):

. Professional education programs in library and information science are geared mainly to present needs and those of the next few years rather than to the long-range future.

.The range of programs offered by most accredited graduate schools does not take into account work being given in undergraduate programs developed for training paraprofessionals nor for completion of a minor in library science.

.The methods and materials of instruction employed in library and information science education in general are traditional, antiquated or obsolescent.

.Serious differences of opinion exist among specialists regarding the validity of most so-called "core" programs.

.There is little agreement concerning the specific knowledges and skills prerequisite for successful study of library and information science. Still sought by most school deans and directors regardless of formal preparation is the "bright" individual.

.Library schools do not prepare students to accept responsibility for uses to which information is put.

.Library and information science curricula place primary emphasis on administrative routines and on operational techniques and technologies.

.The goals of professional education in library and information science are generally unstated and, even where stated, are usually ambiguous; they are not stated in behavioral terms nor conceived in terms of competencies to be acquired.

.Library school field work and internship programs are often administered on a haphazard basis. (Internships can frequently prove to be more adaptive than educational.)

- .Advanced study and doctoral programs frequently suffer from parochialism.
- .Despite much lip service to the contrary, it is the tendency of graduate schools of library and information science to go their autonomous ways. Even interdepartmental cooperation tends to be limited.
- .Admission policies and procedures do not often take existing and anticipated population distributions and specific geographic needs for personnel into account with the result that an insufficient number of blacks, Puerto Ricans, Mexican Americans and representatives of other distinct ethnic and socio-cultural groups have been recruited and received professional training.
- .Professional schools do little to acquaint prospective employers of their graduates with what trained professionals in information science and services can do in helping to identify and resolve important information problems.
- .Adequate preparation of media specialists to function in multi-media environments tends to be limited to doctoral programs the graduates of which are unlikely to accept work in local schools or public libraries or in district school offices.
- .Paraprofessional education programs give little attention to the "why" as distinguished from "how to do it" aspects of library and information service.
- .There is little point in talking about development of future educational programs in library and information science in terms of

completing one (or two) graduate years. Acknowledging difficult economic and social problems to be resolved, professional education programs must be devised which will provide more adequate opportunities for development of the broad range of competencies required and which may call for completion of two, three and sometimes even four years of advanced study as well as participation on an intensive basis in programs of continuing education. The one-year (or 15-month) school of library and information science is out-moded. Neither the public, the students, nor practitioners should be misled into thinking that significant mastery of the total field of information science, technology, and services can be obtained in this length of time.

* * * * *

A last proposition requires more extended treatment:

That single task most vital to the improvement of professional education in library and information sciences involves the positing of goals responsive to changing societal needs and the formulation of clearly stated learning objectives which will identify specific competencies to be acquired in terms of which improved instructional methods and media can be devised and put to good use and in relationship to which valid measures of performance can eventually be defined and applied.

To date, this task has been undertaken systematically in only a few places and mostly on a sporadic basis. Need for that effort, when recognized, usually remains ignored and where not ignored simply doesn't get going. Nor is purely local criticism of professional curricula in library and information science helpful. The difficulties

of producing professional curricula based on clearly defined objectives stated in behavioral terms and the development of appropriate new teaching methodologies are enormous and should not be left for each institution to resolve for itself. What should be encouraged, therefore, is the launching profession-wide of a library (and information) science curriculum design effort which will proceed from detailed specification of competencies needed to perform satisfactorily in both present and prospective library and information service positions in light of such hard data as can be gained from manpower studies or which can reasonably be hypothesized. Necessarily, such an effort may have to take on the proportions of a major project which in some ways could resemble the work done several years ago in creating for secondary education the new "physics", new "math", new "chemistry" and the fruits of BSCS (i. e. the Biological Sciences Curriculum Study).

Summing up its efforts, work undertaken by the CSIE Task Force on needs for "Improvement of Professional Education in Library and Information Science" addressed chiefly the matter of competencies and accomplished a tentative "mapping" of priority concerns in the field which Task Force members believe could serve helpfully as a guide for discussion of library school curriculum planning. Section II of this report comments briefly on recent professional literature. Section III presents a listing of major Task Force conclusions and recommendations. Appendix A reports several "minor" concerns, and Appendix B incorporates a bibliography. Appendix C lists institutions visited specially by one or more members of the Task Force to gather supplementary information.

II. Some Notes on Recent Professional Literature

Uneven in quality and significance, recent professional literature bearing on topics related to future needs and means for improving professional education in library and information science is voluminous and prolix. To review even a small portion of this literature systematically (with help gained from two ERIC searches--1968 to date) took major commitments of CSIE Task Force time. A review was, however, judged necessary to clarify the scope and nature of innovations and recommendations currently reported, to identify areas of concensus and priorities, to discover gaps, to make possible the drawing of inferences regarding implications for change, and estimate the feasibility of making such changes.

Appraised in bulk, the professional literature examined was found generally relevant but was disappointing from the Task Force point of view (which was seeking to find responses to future needs defined as such). Many writers treating such questions obviously encountered difficulty in defining and delineating the field of "library and information science" and tended to deal with needs for professional education on a "piece-meal" basis. The largest number of publications examined, which do offer specific suggestions for improving professional education are essentially incremental--i. e., they call simply for the modification of existing curricular emphases, addition of courses (and/or prerequisites), increased use of newer teaching methods and media (especially of computers), more cooperative arrangements to be

employed in the administration and support of programs, etc. The manpower studies reviewed, perhaps necessarily, tend to reflect demands for new personnel to perform existing jobs or to perform new jobs in established settings, and they put forward statistics which project the future in terms of present conditions and rates of change.*

With exceptions, statements made regarding chief goals of formal professional education in library and information science appear to accept as a base premise the idea that "librarianship" is a single, unified professional activity--entrance into which requires a significant degree of common exposure to a set core of academic and professional studies. A second underlying premise identified might be read to the effect that normally professional education should involve completion of a one or two-year program at the master's level with opportunities for advanced study generally reserved for those seeking teaching and research positions or higher administrative status in a growing or already large organization. Needs for improved programs and forms of continuing education are acknowledged widely but most of these haven't yet become a truly integral part of the "professional" education enterprise in a formal sense.

Acknowledging the risk of failing to mention other and perhaps equally significant articles and reports, the Task Force wishes to call attention to a few of the more comprehensive and thought-provoking items read

*A useful by-product of Task Force efforts (recommended for separate publication) is a bibliography compiled by James W. Brown. The main focus of this bibliography is manpower studies in the fields of library and information science and in instructional technology.

which were found particularly germane to Task Force interests. In this context (and excluding reports authored by Task Force members) such names as those of Bourne, Herschfield, Parker, Schur, Taylor, (Robert S.) and Wasserman stand out. (A longer list would include also the names of Asheim, Boaz, Boll, Bundy, Gaver, Goldhor, Horn, Mignon, Sinclair, et al).

Among institutions having the most active, future-oriented "faculties" and/or which are supporting innovative program planning, development or research activities (when judged on the basis of published reports) are the Universities of California at Los Angeles, Maryland, Pittsburgh, Southern California, Syracuse and Florida State.

When specific topics are considered many personal names come up: For example, regarding usage of computers in library education--Pauline Atherton, Gerald Jahoda, Vladimir Slamecka and Martha J. Zachert. In the field of continuing education key names include those of James Kortendick, Robert Lee and Elizabeth Stone. Dorothy Deiniger's brief paper on "Paraprofessionals in Libraries and Media Centers" makes uniquely perceptive contributions.

The work of committees appointed and sponsored by the American Library Association, American Society for Information Science and the Associations for Computing Machinery deserve mention as does a report published in 1972 by the Carnegie Commission on higher education on the place of Instructional Technology in Higher Education.

Prominent among recommendations advanced in recent professional literature are those which urge the extension and improvement of opportunities

for continuing education. An unspoken but obvious consensus regarding priorities also exists in statements which call for improved use of newer methods, techniques and technologies to assist and accelerate learning processes. Special needs of information science are reflected in recommendations for adding interdisciplinary, technical courses on management, systems design, computer use, and in specification of related prerequisites including mathematics and computer language, etc.

Two priority concerns, evident from the sheer number of recommendations advanced are: (1) A desire to enrich educational programs by adding more field experiences, adding opportunities for study in special fields such as international library development, and offering more work in special subject areas such as the health sciences and with special forms of material (e. g., maps) and constituencies (e. g., the disadvantaged); (2) the hope that more cooperative approaches to development and administration of professional education programs and library information science would be undertaken to permit a joint use of scarce resources (including faculty), increase specialization within single schools, reduce operating costs, share responsibility for recruiting and screening applicants, etc.

Conspicuously absent from published professional literature are candid, first-hand expressions of facts or opinion presented by current (or recent) students and of faculties for that matter. Also missing (perhaps for lack of suitable criteria) are evaluative surveys and studies aimed at determining instructional program relevance and worth; there

is little serious discussion of organized educational activities bearing on professional ethics and social responsibilities; technical and technological changes are reflected more often in reports of curriculum development than are societal concerns; and the practical feasibility of implementing recommendations offered (either directly or implied) is too frequently ignored.

Two overriding conclusions emerged from the Task Force's review of recent professional literature. The first is that a large number of specific improvements in professional education in library and information science--a few fundamental, many simply enriching--are needed, wanted and are being sought actively (some have actually been proposed many times over many years) by individuals, professional groups and associations and by academic institutions. Most of the changes being sought, however, are those which would take the form of minor curricular adjustments needed to yield individuals capable of serving in existing programs and institutions as distinguished from being prepared to meet future needs.

A second major conclusion is that, until the whole field of library and information science is redefined in terms of future information needs and the probable shape of future information service institutions and until related professional educational responsibilities are restructured to cover the resulting spectrum of personal competencies required, the most important changes may not be made.

One further conclusion which influences practical prospects for improving the situation (as expressed by several writers), is that the

emotional readiness and intellectual capacity to make those changes really needed may not yet be represented in most professional schools. Self-selected, relatively non-assertive and negatively oriented (toward change) student bodies and faculty members still constitute a majority of those who are involved in professional education in library and information science. Further, since needs for change are well known to practitioners and suggestions offered have been many, the problem appears to be less one of apathy than that caused by a sense of impotence --which again, the Task Force believes stems from needs for redefinition of the field and its responsibilities.

III. The Most Apparent Needs For Improvement

In order to provide some context for the statement of conclusions and recommendations which follows it seems appropriate to present first a brief and hopefully informed, predictive look at the future of library and information services.

A Tentative Forecast*

During the balance of the present century, the growing complexity of social patterns and information service requirements (in the United States, at least) suggests needs for performance of both traditional and new library functions capable of serving additional millions of people in decentralized (and even mobile) locations from expanding, electronically controlled reservoirs of information to meet existing as well as many new kinds of personal, educational, and vocational information demands. Information storage, retrieval, transfer and display techniques will be utilized to reach new as well as familiar environments in new ways. And, indeed, the situation may well become one in which it could prove more efficient to take information (and educational opportunities) to people at little or no cost than to bring people to information or to circulate it in terms of priorities and practices characteristic of the early 1970's. Performance of library functions will in the future also involve provisions of help needed to ensure more effective and efficient use of that information which is provided.

*Adapted from C. W. Stone, "On Curriculum Trends..."

"Guess-timates" drawn from recent articles and reports appearing in professional journals regarding future development of library and information service programs (and related projections of manpower needs) do not preclude the possibility that most Americans will by 1985 have cause to rely upon new types of local or regional communication service agencies or information counseling centers as their primary means of gaining access to the world's store of recorded knowledge. Admittedly, an entirely fictional concept, which does, however, represent in physical terms the kind of organization which will be needed, the "information center" idea suggests development at the community level of something more than a typical large public library system (although less than a "people's university") having elements of an up-to-date branch bank, a chain department store, and a social welfare counseling service located somewhere within the structure. Regular fiscal support would come from local, regional and Federal sources and utilize a fee system established to meet costs of special services.

Taking advantage of a seemingly ever-broadening range of modern electro-mechanical devices developed for information transfer and handling, local "information centers" would maintain direct access to regional, national and even to international centers. Local units would, however, be able to tap directly world-wide networking approaches to the gathering, sorting and storing of knowledge and, in light of constituent requests, be able to initiate independent searches, handle information retrieval and effect distribution (in some cases even reaching directly into a patron's home or office with a data- or picture-phone device which has

the additional capacity of producing hard copy on demand.)

"Information Center" personnel (including those still called librarians) will serve Center functions as representatives of various types of public and private constituencies responsible for (1) analyzing needs for knowledge; (2) making efficient use of "information center" systems and technologies; and (3) providing counsel on ways and means of putting information to good use.

Expressed in simplified terms, the "information center" idea could be said to anticipate a global service organization which eventually might be comprised both of larger and some smaller units each of which, however, would be linked to all other units in the system for purposes of achieving multi-directional communication and all of which could be asked directly to provide assistance to individuals, groups and organizations wherever located. Requests for service would be honored in terms of established levels of need and priorities based on the public consensus.

The total number of "information center" personnel needed to establish and maintain even the most basic operations (of such a world knowledge service) would necessarily be large and would demand a range of expertise covering a very broad spectrum of the communication sciences, arts, crafts, skills and special talents. Indeed, the range of competencies deemed essential may be so broad as to defy listing at this point in time.

However, certain knowledges will undoubtedly have to be represented in depth among information center employees working on the professional

level. Importantly, these include: (1) understanding of human communication and learning processes; (2) familiarity with and demonstrated ability to use the main apparatus, techniques and technological systems which will make up an information center's ways and means of acquiring, handling and providing access to the world's store of knowledge; (3) sufficient appreciation and awareness of content concerns in one or more fields of basic human interest and endeavor to render possible identification and sound interpretation of user needs and to employ information center resources effectively in a patron's behalf. In short, the three prerequisite knowledges will include communication, information systems and basic subject expertise.

Types of Curricular Change Required to Meet Future Needs

Taking such forecasts into account, the most basic kinds of change required for improving the content of professional education in library and information science, expressed in broad terms, look toward recruitment and training as professional workers of more individuals who will be able to demonstrate (1) increased knowledge of information and of information needs and related understandings of personal and inter-group communication and learning processes; (2) abilities to design, develop and utilize improved information handling systems; and (3) capacity to make effective application to library and other information service tasks of computers and alternate forms of information storage, processing, transfer and distribution technology. Also, needed urgently will be

"library" education programs which will yield "active" rather than merely passive concerns with the social effects of information distribution and more individuals who are willing to accept appropriate measures of personal responsibility for the consequences of identifying information needs and disseminating information in terms of these needs.

Other changes needed relate for example, to library education program organization and structure. Put simply, these are the sorts of change which would acknowledge as fact the idea that a single unified program of "professional" education in library and information science probably cannot be designed since there isn't a single, unified field. Rather, there are numerous fields and areas of study involved in library and information science including (1) the nature of information, (2) information technology, and (3) information services. And individuals must be recruited and prepared to follow differing career paths relating to one or another of these areas.

A third cluster of improvements required to better professional education in library and information science are those which concern the selection and use of newer instructional methods and strategies. Moving away from traditional lecture courses and the rote memory work traditionally done by students in mastering lecture notes and textbook-centered approaches to study, the emphasis should now be placed on individualized (and small group or seminar) learning techniques; utilization of non-book learning resources wherever appropriate; introduction of case study methods;

student self-pacing and self-evaluation activities; maximum exposure to actual (or simulated) field conditions through visits, extended practica , increased use of internship arrangements and other methods of giving real-life experience; and reorganization of learning prescriptions, assignments and related testing methods to establish a competency-based approach.

Another set of needs for improving professional education in library and information science reflects the desirability of lengthening and strengthening educational processes by "institutionalizing" continuing education as the direct responsibility and function of formal education programs. Difficulties of motivating students to continue education throughout life is acknowledged readily. But the importance of continuous updating to all professional personnel who work in behalf of libraries and information centers is obvious. And present, rather haphazard, independently sponsored activities which typically comprise continuing education programs offered in the form of institutes, workshops, occasional conferences, summer courses and the like are inadequate to provide the systematic, intensive educational programs now essential.

Summing up these and adding several other types of changes which Task Force members believe will be needed to yield professional education programs adequate to satisfy future library and information service requirements, Figure I presents a summary listing of recommendations.

Figure 1 - Fundamental Improvements Needed in Library
and Information Service Education

- a. Goals of preparation should be redefined
 - To help make it clear that prime concern is with information needs and with provision of access to information as such and not simply with the location and delivery of library materials
 - To highlight the importance of learning basic functions as distinguished from typical institutional routines
 - To prepare library and information specialists to reach people where they are, faster, utilizing modern media
 - To include preparation for assisting the use of information and appraising consequences of such use
 - To better meet the needs of special groups in the population (which includes an implicit need to recruit more Blacks, Puerto Ricans, Mexican-Americans, et al.)
- b. Organizational thinking should emphasize
 - Development of the field as a broad spectrum ranging from paraprofessional through continuing education
 - Establishment of more cooperative programs, sharing of scarce resources, awarding of joint degrees, ready transfer of credits (and development of close ties with State agencies, professional associations, etc.)

- Three main areas of study on the graduate level: Information Science; Technology; Service
- Specialization among the schools in accord with special interests, locations, student body needs, etc.
- c. Content changes should emphasize
 - The giving of more attention to human relationships as distinguished from management and technology
 - Establishment and enforcement of demands for adherence to appropriate standards for admission to graduate study (including advance completion of postgraduate studies)
 - Provision of more options for specialization in given fields of career interest (defined in terms of functions and constituencies rather than by type-of-library)
 - Abandonment of obsolete "cores"
 - Greater subject specialization
 - Use of new tools and statistical techniques, etc., and personnel management
 - Introduction of supplementary content from the fields of educational technology and information science (as these are presented separately)
- d. Instructional methods employed should
 - Be geared to competency-based curricula - provide more field experience components
 - Make more and better use of new teaching techniques and technologies
 - Stress self-learning approaches

e. Federal (or other) support should be sought to

-Mount a nation-wide program for the regular inventory, production, distribution and appraisal of new learning "packages", etc., relevant to library and information science education on the graduate level and for use in continuing education

Education for Competency

Acknowledging as valid Task Force projections offered regarding future information service requirements and the related types of change most needed to improve professional education goals, content, methods and structure, the vital question remaining is, "What specific competencies should professional librarians and information specialists possess in order to satisfy future demands?"

Pieced together from recommendations offered by a number of sources, Figure 2(below) lists in summary form those primary types of competency which the Task Force believes should be acquired by students at some point in the sequence of their education for professional work in library and information science. Professional work is defined arbitrarily to include performance of functions such as the following:

- . Management (organization and personnel); communication, persuasion
- . Counselling and guidance; liaison
- . Information acquisition, organization, analysis and description
- . Instruction and instructional program development
- . Media production and utilization
- . Research activity; theoretical study

- . Subject knowledge interpretation and evaluation; application
- . Systems analysis and design
- . Technical systems development and supervision of maintenance

For convenience in thinking about these functions, professional career paths which reflect the chief job functions of library and information science are grouped below under four headings:

A. Service Personnel

1. Managerial and Business*
2. Analytic and descriptive
3. Consulting; liaison and teaching in relation to-
 - a. subject areas
 - b. constituencies (groups, institutions)
 - c. media (e. g., TV)
 - d. other agencies

B. Technologists

1. Instructional design; communication services
2. Utilization of technology (e. g., of computers for automation)

C. Specialists

1. Theoretical formulation
2. Systems development
3. Processing (e. g., indexing, editing, abstracting, translating, reformatting, producing)

* * * * *

*Planning and evaluation of
programs and operation

Policy formation

Budgeting

Personnel administration

Facilities development
Coordination of programs and
services
Equipping and supplying
Communication, promotion and
persuasion
Studies of efficiency and
effectiveness

D. Support Personnel (for all areas)

1. Administrative
2. Clerical
3. Technical
4. Maintenance

Figure 2 - Professional Competencies Needed by Library and Information Service Personnel

a. Abilities to conceive, plan, establish, manage (and supervise) the continuing successful operation of information program(s) needed to serve given classes of users...

- Chief Prerequisite Knowledges: e.g. (and implied skills)
- Systems analysis, policy formulation, budgeting, program evaluation, fiscal analysis
 - Communication, persuasion, reporting
 - Personnel recruitment; job description, assignment, appraisal; staff organization and development; work flow design
 - Facilities planning; maintenance
 - Existence, location, roles and relative significance of other libraries, information and communication systems
 - Professional responsibilities in relation to intellectual freedom, ethics, social action, etc.
 - Optimum roles in relation to intended constituency
 - Determination of needs for and design and testing of services

b. Abilities to consult with a given class of users; diagnose specific needs; locate, retrieve and provide relevant information in

formats and amounts needed and (as appropriate) assist in the utilization of information provided...

Chief Prerequisite Knowledges: e.g.
(and implied skills)

-Content and investigative methods which may be fruitfully employed in gathering information in:

e.g. Humanities
Physical Sciences
Life Sciences
Behavioral Studies
Etc.

-Individual and group processes of communication, learning and information application

-Interviewing, response analysis and design, instructional planning and teaching

-Relative capacity and efficiencies of various media and related hard-ware systems to provide information sought (including computers and artificial languages)

-Nature of information and of information needs typically relevant to the user (class) being served

c. Abilities to acquire, organize, analyze, describe and process information and materials in relation to development of collections (or of providing access to collections)

Chief Prerequisite Knowledges: e.g.
(and implied skills)

-Nature and most likely sources of information (published and unpublished) which will meet anticipated needs of clientele(s) to be served

-Applicable languages (of information and of users)

-Information evaluation, interpretation, application--editing, abstracting, indexing, etc.

-Conservation and preservation
of recorded forms of information

e.g. -Procedures to be followed in
selecting (gaining access),
acquiring, organizing, con-
trolling, and/or distributing
all forms of relevant informa-
tion needed to serve anticipated
user purposes

In listing job functions and in suggesting competencies, it is not pre-supposed that any one librarian or information specialist could or should be expected to acquire all of the professional knowledges and skills believed desirable or that any one educational institution can or should provide the full range of learning experiences needed to operate all types of library and information service programs in the future. Both people and institutions necessarily will have to specialize. However, the list is believed to be indicative of the range of competencies prerequisite. And, although improvements come gradually (except in newer institutions) the directions in which such changes should lead are fairly clear.

In the interest of establishing some priorities the statements which follow present in some detail more formal definitions of nine areas of competency which the Task Force believes should receive increased emphasis in developing educational programs to serve the future. The areas bear chiefly on program planning, management and on utilization of resources.

1. Adaptation of Library Programs

The first area involves competencies which call for development of increasing abilities to adapt library programs to clientele characteristics. Reports studied in preparing this paper emphasize changes that have occurred and seem likely to continue to occur in society. Of particular concern are the demands of representatives of disadvantaged groups to participate in decisions affecting their efforts to achieve fuller lives for themselves and their children. Studies reported in recent years highlight great differences among various social groups and hypothesize how these differences actually influence use of library services. The fact that, typically, libraries reach only a marginal share of the total population and have a particularly unimpressive record with groups seeking improved social status is mentioned again and again. It is also pointed out that there are apparent differences in the willingness and abilities of such groups to read (review or listen to) informational messages presented in different language and media forms. The professional "library science" curriculum being planned with the future in mind should be concerned with determining the true nature of such differences with ways libraries should conduct their programs to accommodate to them.

It seems reasonable, therefore, that library school graduates should:

1. Demonstrate the skills necessary to meet library clients "on their own ground"--at their levels of interest, experience, and capability--and to develop and use criteria for choosing

media (or combinations of media) of all kinds (non-print types among them) to meet those needs.

2. Be able to design and conduct demographic and sociologically-oriented surveys of potential and actual library users to determine: (a) Amounts of types of use made of information services, including but not limited to those of the library, (b) unfilled information needs, and (c) satisfactions, dissatisfactions and improvements needed in information services provided.
3. Be able to develop plans to motivate members of all social groups to use library resources and services and to be guided in this activity by familiarity with the advantages of certain media forms over others in aiding the achievement of objectives.

2. Range of New Media Forms

Reports studied and comments offered by specialists also call attention to the many wonders of modern communication and of recent improvements in the production, management, and dissemination of information.

Within a very short time (only little more than a half century), the unbelievable communication innovation has become commonplace: radio broadcasting; sound and color motion pictures; color television; stereophonic and quadraphonic recordings; instant, high quality reproductions of printed materials; myriad applications of computers to problems of

information management in all its various forms; and a host of others. These increased numbers and types of information channels have facilitated, and to some extent caused, a similarly vast increase in the output of information products.

Accordingly, professional education curricula should anticipate and emphasize the provision of cross-media access to data banks (however remote) and eventual network deliveries of whatever information may be required to locations convenient for users rather than the building up of comprehensive collections of literature and performance of archival functions.

To this end, information service personnel should be prepared to make effective use of wide-area telephone services--Telex, facsimile, cable TV, radio-video cassettes, satellites and computer technology, etc.--to satisfy increasing requirements for delivery of "fast" information (that which calls for a rapid "turnaround" time to remote and often mobile locations, e. g. to meet hospital needs, assist construction planning, provide banking and marketing data, present special news, etc.

(Parenthetically, it is recommended that schools share information about new approaches to instruction across the profession and make more use, cooperatively when practical, of new instructional methods and tools.)

e. g. Case study methods

Routine audio-visual media

Radio and TV-based technical systems
Computer services
Learning laboratory arrangements
Information processing laboratories
Etc.

But, one caution should be observed. Granting the "miracles" represented, technical possibilities for use of modern communications technology still exceed by a large margin those which, generally speaking, are economically justifiable. Thus, literature-based information systems are likely to continue to grow with their stores of print and near-print media because of low cost and user convenience. Development and wide-spread use of large capacity, cheap, direct-access, machine-readable information storage units may eventually change this picture, but such events are yet to come.

Summing up respecting new media competencies, it is proposed that candidates for library and information service positions should:

1. Be able to describe the significant characteristics of all major communication media (and the related technologies).
2. Be able to apply appropriate criteria in choosing such media to add to library collections.
3. Be able to supervise the application of accepted standards and procedures in classifying, cataloging, and circulating all types of media--print and non-print alike.

4. Be able to develop, to assess, and to recommend improved procedures for providing such media and media services to library clients.

3. Information Searching and Management

Reports studied by Task Force members highlight recent technological developments some of which have occurred first in the information field and others of which are "spin-offs" from allied areas. Typical of such developments are: Magnetic-tape catalogs, several kinds of astoundingly efficient microforms, computer search facilities, electronic networks, electronic composition of books and other printed materials, audio and visual tape banks, electronic circulation control, and a host of others.

The library and information science curriculum should give more attention than it does to these technologies.

It is proposed, therefore, that degree candidates ought to:

1. Demonstrate use of the tools necessary for improved information service management implicit in such developments.
2. Be able to use such resources in designing, implementing, and improving information-searching services of organizations which employ them.
3. Be able to teach the library clientele how to query library "keys" efficiently (computer catalog printouts, direct access to computers, reference books, reference assistants, others).

The preceding specifications relate to uses of information technology. In the fields of information searching and management more generally, recommendations are detailed and demanding.

Established as prerequisite for students interested in pursuing graduate study in the field are basic understandings of logic, statistics, linguistics, computers, artificial languages, and advanced mathematics. To this list of prerequisites there is frequently added an "information science" core which (whether completed on undergraduate or graduate levels) can provide a common foundation for information science graduates. Studies in the following areas are said by specialists to meet core needs:

- Introduction to Information Science
- Systems, Theory and Application
- Mathematical Methods in Information Science
- Computer Organization and Programming Systems
- Abstracting/Indexing/Cataloging
- Information and Communication Theory
- Research Methods in Information Science

In justifying such recommendations specialists refer frequently to the following "generic" list of positions for which they say future graduates of library and information science programs must be prepared:

- File Maintenance
- Systems Analysis
- Programming
- Systems Implementation

Systems Evaluation

Modeling (Mathematical and Simulated)

Interfacing with Users

Report Generation

Indexing Services

Classification

Retrieval

Reference Services

Competencies needed for performance of these and related functions include the following:

1. Ability to use appropriate methodologies and environments to develop library and/or information resource-sharing systems.
2. Ability to develop mathematical models and/or simulations of library and information science systems (utilizing these techniques for evaluating systems and design of alternative approaches).
3. Ability to use operations research methods in the analysis or design of library and information systems for purposes of optimization (including use of microphotographics, networks, union catalogs and other systems).
4. Ability to develop and/or use appropriate criteria and methods of evaluating library and information systems and their performance (by developing statistical data and analyses from

which significant conclusions may be drawn).

5. Ability to use computers* for performance of many tasks in the library and information science environment such as:
 - a. Identifying and selecting information content in documents by automatic indexing and abstracting, linguistic analysis, and producing thesauri
 - b. Maintaining "bibliographic control" by conceptually designing, implementing and utilizing information storage and retrieval systems such as Meplars, NASA information centers, Chemical Digests, etc.
 - c. Managing control of library and information functions such as:
 - i. Acquisitions
 - ii. Cataloging
 - iii. Circulation Control
 - iv. Series Control
 - v. Budget Control

*One major change in professional education curricula wrought by demands for increasing information science content is represented in the fact that, during the past three years, the number of computer science courses has increased from twenty to thirty-nine per cent of the total curriculum almost exclusively at the expense of library science courses as such. In short, the sheer bulk, intellectual as well as physical, of contemporary information and especially of that represented in scientific and technical literatures is now such and is growing at such a rate that there really is no other choice available than to give major and increasing attention to whatever tools and techniques may be applied to each and to accelerate the tasks of searching, storing, sifting and retrieving of information to meet specific needs.

6. Ability to develop question-answering systems and methods for ~~regenerating~~ information
7. Ability to develop systems for selective dissemination of information
8. Ability to design and/or use appropriate methods and criteria for determining the effects or influence of information on users and the extent to which information materials actually satisfy or fill needs
9. Ability to choose many various ways of displaying information which are most appropriate to the purposes for which the information is being developed

4. Relationships of "Libraries" and "Education"

There is growing confusion evident regarding the related roles of libraries and "education"--especially in view of many recent changes which have occurred in the latter field. Traditional confusions which have existed between them have been heightened in many communities by the advent of "open schools" (whose children look, more than ever, to public libraries for resources and for after-hour services which are unavailable at school), "continuing education" and "universities without walls" (whose students need places to study, resources to use, and counselors with whom to talk), and other alternative forms of education.

The professional library school program should provide more experiences for students to help them to identify areas of possible overlap, complementarity, and uniquely appropriate services of "libraries" on the

other. In this particular regard, the Task Force wishes to encourage study of new types of experimental information service projects such as those sponsored by the Dallas and Denver Public Libraries to develop programs cooperatively with other organizations and to provide the community served with increased opportunities for gaining a university education with a library serving as chief point of contact.

It is proposed, therefore, that students should:

1. Describe the factors in terms of which schools and libraries generally are assigned social functions, organized and financed to achieve them, regulated, and evaluated.
2. Name outstanding examples and advantages of school-library cooperation, especially with respect to media and media services.
3. Be able to describe ways for schools and libraries to cooperate in providing services that neither could (or perhaps should) provide alone--as, for example, establishing a dial-in audio tape bank, a central media processing facility, a closed-circuit television service or facilities, an intergroup museum or cultural arts center, local artifacts collections, a mobile media van service, or others.

5. Rising Costs and the Financing of Library Services

The problem of financing library and information services has recently grown to serious proportions. Reductions of federal funding have

aggravated this problem, as have the rising inflation (which has reduced the real value of "steady dollar" appropriations) and trends toward higher salaries.

Perhaps the most serious aspect of the problem of library finance is the rising cost of library resources themselves. This is crucial in the case of the so-called "new media" (films, video cassettes, multi-media kits, sound filmstrips, or transparencies) and of the equipment required to use or produce them.

The professional curriculum should provide more experiences to assist candidates in becoming skilled in judging the relative advantages, disadvantages, and cost-effectiveness of expending funds for those several competing purposes, and perhaps in finding means of expanding budgets to accommodate such program needs.

Graduates of library schools should:

1. Be able to apply suitable criteria in judging the relative worth (or probable or actual "cost effectiveness") of competing or redundant media or media services.
2. Be able to obtain and to assess data regarding various communication and information resources and channels (including open-and closed-circuit television facilities, radio stations, newspapers, information centers, special libraries, (and the like) of the typical community and

of facilitating cooperative, rather than competing, relationships among them, thus eliminating costs of unnecessarily duplicating services and opening up opportunities to extend information services to areas not covered.

3. Describe the likely impact of networking arrangements for information services (including use of satellite facilities) in changing present political (and, hence, financial) structures.

6. Visual and Aural Literacy

A number of reports and papers reviewed by the task force emphasize the importance of visual and aural literacy in the modern world and stress their still greater significance for communication in the world of the future. There is a growing recognition of the fact that visual and aural literacy are not the same as the literacy usually associated with verbal reading and that they need to be improved in the general population.

Library and information science curricula should provide experiences leading to understanding of the unique qualities of visual and aural literacy and demonstrate ways library candidates may contribute to their development.

As a result, students should:

1. Know and be able to use results of research and informed opinion concerning visual and aural as well as verbal literacy.

2. Be able to select resources for and to plan and manage library programs (including the setting up of amateur film competitions, film festivals, (and the like) to assist in developing such skills throughout the full range of its clientele.

7. The Role of the Library as a "Change Agent"

The matter of determining the proper role of the library in encouraging and facilitating social change continues to be debated. Only a few of the reports and papers studied support the idea that libraries should take steps to aid clients in making better use of the information, that they should aid clients in learning how to use information to achieve desired ends.

The librarianship curriculum should be concerned with this "activist" aspect of library information programs.

Candidates for professional positions should therefore:

1. Be able to apply principles of communication in answering the questions: What is to be communicated? To whom? For what purposes? Through what media or channels? Under what circumstances and conditions? With what results (effects, changes in behavior)?
2. Be able to assist a given constituency in selecting and using (perhaps producing) media to achieve intended purposes. (NOTE: Doing these things may require the setting up of program

planning workshops, demonstrations, helping, assisting clients to prepare audiovisual or printed media to serve specific purposes or to compile descriptive lists of selected media resources.)

3. Be sufficiently informed and willing to encourage publishers and other "knowledge industry" producers and disseminators to develop new media resources related to topics, fields, or problems known to concern library clients.

8. "System" Concept in Managing Library Programs

Within the library profession at large there is considerable acceptance of the proposition that information problems are usually best approached systematically and with a behavioral orientation. Overly simplified, this approach recognizes the need to carefully express program objectives,--long-and short-term goals to be reached, changed conditions or behaviors to be effected in target groups--and to determine criteria to be used and data to be gathered to measure their attainment. "Cost effectiveness" (defined as the relationship of program dollar inputs to demonstrated social benefits) is the usual measure of program effectiveness. Once objectives are established, alternative means (programs) to achieve them must be determined. Proper implementation of the plan calls for interim monitoring and evaluation. Continuous program revision is also required (adjustments in input, timing, sequencing, relationships, measurement, and the like). Applications of this "systems" approach to the solution of problems is recognized, in the field of information, as integral to the concept of "instructional

(or educational) technology."

The professional curriculum should give increased attention to the "systems approach" and stress it as crucial to proper management of any total program of library and information services.

The would-be professional worker should:

Be able to apply principles of the "systems approach" now widely used in industry, education, and government to the management and evaluation of library programs.

9. The Concept of Differentiated Staffing

Professional requirements of library and information service continue to be changed by economic pressures for differentiated staffing which result chiefly from society's unwillingness to pay adequate professional salaries to individuals doing "nonprofessional" work.

Recently, a considerable number of competent individuals (without special training) have been hired by libraries to perform such special tasks as computer programming, system planning, media production, and emerging technological reproduction and projection services. Expanded library technology itself opens up many such opportunities to use technician-level personnel to perform tasks (circulation, information searching, and the like) which, heretofore, have been assigned only to trained librarians.

The librarianship curriculum should stress more than it does the needs for and criteria for more exact definitions of "professional," "nonprofessional" or "paraprofessional," and other personnel classifications used in the field.

Library school graduates should, therefore:

1. Apply principles and techniques of job analysis to their own work and to the work of others whom they may supervise in the library.
2. Apply standards pertaining to "professional" and other levels of work within the library and be capable of and willing to differentiate appropriately between them in assigning duties to library personnel.

Next Steps in Program Development--Redefinition

Taking into account increasing need for development of the competencies discussed, next questions to be asked and answered concern the planning and organization of professional education in library and information science. What has been accomplished thus far? What are the most important next steps?

Among changes already made or planned at a number of American universities are the following: (1) Lengthening of the professional curriculum(a) by requiring completion of two graduate years to fulfill requirements for the master's degree and to develop competencies in a field of specialization, and (b) by reaching down into

undergraduate programs to specify additional courses and minors or majors which must be completed before gaining admission to graduate study; (2) by injecting into already overcrowded programs several new areas of study including such complex subjects as cybernetics, computer languages, etc.,; (3) by establishing more training programs for paraprofessional personnel; (4) through introduction of new instructional methods and technology; (5) by expanding the number of post-degree and in-service training opportunities offered on a short-time basis in areas such as fiscal planning, computer use and work with disadvantaged groups.

Insofar as they go, the majority of such improvements are well and good. However, they are essentially additive. And one negative view voiced frequently is to the effect that professional education in library and information science has already become an almost completely "indigestible stew" into which everything may now be thrown with impunity excepting perhaps the kitchen sink. Results, for too many students and even for some faculty, are confusion, frustration and disappointment and rather acute "identity" crises.

Task Force conclusions regarding most apparent needs for improvement of professional education do not question the validity or continuing existence for at least two more decades of the several levels and type of graduate and undergraduate programs of professional education now serving the field whatever their limitations. Instead, in

large part they derive from a view that in the past professional education in library and information science has suffered most from the lack of an adequate perspective against which new goals for preparation, organization, development of content, employment of improved instructional methods, etc., might be developed. This lack of perspective is caused by a misconception of the field which is simplistic, nostalgic and seriously inaccurate.

Instead of being seen as a broad area of human interest and endeavor which involves a host of disciplines and many professional, technical and maintenance functions, the field of "library and information science" still tends to be approached by most educators as well as practitioners as a single entity the whole of which requires appreciation, understanding and mastery of many related skills on the part of all individuals entering the field.

Failure to recognize the broad range of work interests and responsibilities represented in library and information service is debilitating. And what should happen now is that, whether achieved by single institutions, cooperating institutions or formerly organized consortia, future programs for developing library and information specialists (or whatever they may one day be called) should be designed to accept responsibility for offering profession-related training and education on (1) undergraduate, (2) graduate, (3) postgraduate and (4) continuing education levels in partnership with other schools and colleges which offer

relevant studies (e. g., business, engineering, subject disciplines, etc.) assisted by the conscious fostering of whatever interdivisional and intradisciplinary approaches may be helpful in any given campus. Expressed in outline form it can be said that there are five main levels (or types) of educational needs in library and information science:

- A. Training of paraprofessionals to perform technical support and assistance functions;
- B. Study of "backgrounding" subjects and mastery of prerequisite "tool" knowledges and skills;
- C.
 - 1. Studies of Information (Science) (and/or)
 - Theories
 - Systems
 - 2. Studies of Technology (and/or)
 - Utilization (e.g. computers)
 - Design and development of schools, storage, and display systems
 - 3. Studies of Service Functions (by subject and specific constituency)
 - Nature, history and development
 - Current rationales
 - Procedures
 - Methodologies and techniques
- D. Advanced studies of constituencies, subjects and functions
- E. Studies of administration and management, automation, and special interest fields in terms of career path needs (continuing education).

Referring to the outline presented of education needs or levels of responsibility (or sequence) the following steps are recommended to curriculum developers:

I. Anticipate the setting up of new communication and information service "utilities" (through revolution, merger and development of new institutions) many of which will supercede existing libraries and information centers taking into account existing societal patterns, the potentialities of communications technology and emerging new definitions of information and of information needs...)

II. Determine manpower requirements of information utilities and specify various job functions to be performed; then state the needs for information personnel in terms of competencies required...

III. Conceive, establish and maintain the primary spectrum of "professional" education programs in library and information science as closely articulated multi-level, multi-track, interdisciplinary activities to be cooperatively planned, supported, administered and promoted...

IV. Divide and offer graduate work in three major fields of study: Information science; information technologies; information services...

A. Formulate educational program goals and objectives for each major field and for each set of related career paths;

B. Establish sound prerequisites for program entry (and insist

they be met);

- C. Acknowledge common learning needs as such but resist pressures to offer archaic generalized "core" programs;
 - D. Organize new curricula utilizing competency-based self-instructional approaches;
 - E. Emphasize the use of new instructional methods and media;
 - F. Have built into each program major more field experience components (real and simulated in terms of which learning activities may proceed)
 - G. Add six (and even seventh year) options for advanced study and specialization in important areas;
 - H. Support major continuing research projects dealing with the nature of information and of information requirements are these applied to various groups and subgroups of the population and design new approaches to preparation of specialists for work with these groups.
- V. "Institutionalize" continuing education as a profession-wide, nationally planned, coordinated undertaking. To be managed as a primary function of library schools and representatives. The cooperative thrust of interested professional associations, State agencies, single institutions, and the library schools to be represented in

supporting the conduct of

- .Post-master's study
- ."Open admission" and "open degree" programs
- .Institutes and workshops
- .Networking approaches and services

Continuing education should stress

- .Interdisciplinary approaches
- .Use of a systems format in planning and implementation
- .Reliance on practical library school-based approaches
- .Multi-media approaches to instruction
- .Need to offer programs on a part-time basis
- .Need to provide financial and other inducements to prospective students

Among the inducements offered to encourage practitioners to participate in continuing education programs should be use of new, advanced certification techniques, re-examination of professional personnel, development of new salary schedules to reward successful completion of advanced studies, etc.

Single library systems and especially academic agencies should be urged to make possible the continuing education of information personnel by extending opportunities (such as those normally given faculties) including a ten-month year, sabbatical leaves, granting of credits for course work taken, etc.

In Conclusion

The main thrust of conclusions and recommendations presented in this section of the Task Force report is to the effect that, given tenable hypotheses regarding the future of information service requirements, the responsibilities and goals of professional education in library and information science may need redefinition in terms of a much broadened perspective of responsibilities. Competency-based approaches to curriculum development should probably be adopted, and the whole field of activity should be restructured to accommodate the approaches proposed. The specific Task Force recommendations offered are intended to stimulate thinking about the important questions raised or implied rather than serve as broad prescriptions.

APPENDIX A - Some "Minor" Concerns

In considering possibilities for improving professional education in library and information science, it is easy to become distracted by criticisms and recommendations offered which are, in fact, minor, although they may be justified. They should receive a properly weighted consideration.

For instance, voiced frequently by students attending accredited library schools and by their recent graduates, are views to the effect that (1) typical courses are uninspired, seriously overlapping in content, conducted on too low a level, and/or irrelevant to contemporary practice in the field; (2) teaching methods generally remain antiquated; (3) students, especially those attending larger schools, normally receive too little individual attention, hardly get to know each other, and are seldom treated as "adults"; (4) basic social questions may be ignored or treated inadequately, including those which concern intellectual freedom, political action, roles of labor unions, etc.; (5) job placement programs are considered "weak" or ineffectual.

Faculty criticisms of library schools repeat standard cliches regarding depressing effects of poor salaries, excessive teaching loads, lack of adequate library and other learning resources, insufficient amounts of time allocated to "cover" special subjects, possible overemphasis on research and special projects at the expense of instruction, lowering admissions standards and failure to screen out applicants unqualified

for degree work.

The reports and speeches of library school deans and directors indicate the continuing budgetary concerns and crises of all higher education and identify problems associated with recruiting a qualified faculty and student body and with reconciling differences between more theoretical interests of library school teachers and an emphasis on practice still urged strongly by most employers. Also highlighted are jurisdictional disputes represented by type-of-library conflicts among professional groups and conflicting estimates of required manpower which tend to impede curricular planning. Also mentioned are the exhausting effects of accreditation routines. Uncertainties are noted regarding professional school responsibilities for assisting development of both paraprofessional and continuing education programs, etc.

Practicing librarians and information specialists, when discussing library education programs, frequently stress the lack of curricular relevance of actual library work, the absence of a strong professional motivation among current students, continuing faculty ignorance of operational needs, and the lack of basic work skills represented among recent library school graduates. Much such criticism could be eliminated if professional schools should do more themselves, as well as in partnership with associations, to acquaint prospective employers with what trained professionals in information science and services can do in helping to identify and resolve important information

problems. (N.B.: Schools should especially take into account job prospects outside of libraries and information centers).

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APPENDIX C - Field Visits

Task Force members visited seventeen institutions to supplement knowledge of current professional education programs and priorities:

- . Brigham Young University
- . California State University - San Jose
- . Catholic University
- . Eastern Michigan State University
- . Florida State University
- . Georgia Institute of Technology
- . Lehigh University
- . Michigan State University
- . Pratt Institute
- . Syracuse University
- . University of California - Berkeley
- . University of California - Los Angeles
- . University of Maryland
- . University of Pittsburgh
- . University of Southern California
- . United States International University
- . University of South Carolina